M/035/011.
UCD Modernization

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Director, Environmental Affairs

Kennecott

March 24, 1997

Mr. Wayne Hedberg
Department of Natural Resources
Division of Oil, Gas and Mining
1594 West North Temple
Suite 1210
Salt Lake City, Utah 84114-5801

Re: Kennecott Utah Copper Corporation (KUCC) Secondary Tailings Pipeline, M/035/011

Dear Mr. Hedberg:

This letter is provided to clarify outstanding issues regarding the secondary tailings pipeline that we discussed in our December 13, 1996 meeting, when we also discussed in some detail the Water Resources Management Program at KUCC. KUCC hopes the Division now better appreciates both the complexities of the water management system and that post-mining water management will be required. For the reasons discussed below, KUCC maintains that the newly installed pipeline does not require a bond adjustment to permit M/035/011 to cover demolition, reclamation and/or maintenance costs at the end of mine life because the pipeline will be a permanent structure used as part of the post-mining water management system. Bonding the structure for final reclamation is not appropriate or necessary because the pipeline will continue operating after mining operations cease. Moreover, bonding for continued maintenance of the water management facilities is not appropriate or necessary because the Division's jurisdiction over these facilities ceases when the structure begins operating for non-mining purposes.

The Division's authority to require reclamation and bonding is limited to "mining operations." *See* Utah Mined Land Reclamation Act, §§ 40-8-13 and 40-8-14. It follows that the Division would not have jurisdiction over a new, non-mining-related facility constructed on a mining site after mining operations had ceased. The same principle applies to mining-related facilities that will be converted to non-mining uses after mining operations cease. Indeed, the Division's

regulations recognize that certain mining-related facilities will have postmining land uses.[1] If these facilities are used for non-mining purposes, the Division's jurisdiction over them ceases. The only question here is whether KUCC's pipeline will in fact have a continued post-mining use. KUCC appreciates that the Division has concerns about this question and offers the following supplemental information to support and strengthen its position that the tailings pipeline will indeed have continued post mining uses.

As discussed during the December 13, 1996 meeting, three general types of water are produced throughout the KUCC property: (1) "clean" water that is suitable for use, either directly or with minimal treatment, for culinary water purposes; (2) "gray" water that is suitable for irrigation use and/or culinary use with treatment; and (3) meteoric leach water which requires some form of treatment prior to discharge. Production of each of these types of water will not cease upon termination of mining operations but will require ongoing management. Some of this water is produced at the south end of the KUCC property and would be best managed and utilized at or near the north end while the most beneficial use of certain north-end waters likely will be at or near the south end. A water management system capable of segregating the various water types and conveying them either to or from the north and south ends of the KUCC property will therefore be necessary.

With respect to the clean and gray water, the value of the water itself guarantees that the water will be used. Water management/distribution facilities such as the tailings pipeline will be necessary to capture that value. KUCC has been approached by several municipalities that are interested in clean and gray water for culinary and irrigation purposes. Both water types are becoming increasingly scarce commodities in the Salt Lake Valley. Because of the scarcity of the water in the valley and the ever-increasing demand, the value of the water will significantly increase with time. Although it is not possible at this time to predict the exact volume and quality of the three major water types or the exact market value, water rights currently sell for approximately $400/acre-feet/year. KUCC estimates that the post mining water flows in the pipeline in question (and others) will range between 2,000 and 10,000 gpm (3,145 and 15,730 acre-feet/year, respectively), which equates to an approximate value of $1.25M to $6.3M per year

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[1] *See* Utah Admin. Rules 647-4-110(3) (Each NOI shall include a reclamation plan consisting of a narrative description of proposed reclamation, including "a detailed description of any surface facilities to be left as part of the postmining land use, including but not limited to buildings, utilities, roads, pads, ponds, pits and surface equipment"); and 647-4-111(9) ("Water impounding structures shall be reclaimed so as to be self-draining and mechanically stable unless shown to have sound hydrologic design and to be beneficial to the postmining land use.").

at current prices. The secondary tailings pipeline will be an essential part of the collection, distribution and management system necessary to capture this substantial value.[2]

With respect to the meteoric leach water, federal and state clean water laws will require perpetual management of this water, including conveyance to an appropriate treatment and/or discharge facility. Several factors favor locating such a treatment facility at the north end of the KUCC property as opposed to the south end where the leach water is produced. These factors include greater management options for sludges that would be produced by the treatment of leach waters and greater discharge options for the treated effluent. A pipeline to convey leach water from the south end to the north would obviously be an essential part of this water management system. The Utah Division of Water Quality would have jurisdiction over such a system and would require the system to be properly operated and maintained.

In sum, the value of the water itself and/or the need to appropriately manage leach waters will guarantee the continued use and appropriate operation and maintenance of the tailings pipeline. As the pipeline will be used for non-mining purposes after mining ceases, reclamation and bonding for the closure of the tailings pipeline is not necessary. Similarly, the Division's jurisdiction over the tailings pipeline will cease when mining operations cease and the facilities are used for non-mining purposes. Accordingly, it would be inappropriate for the Division to request bonding to maintain these post-mining uses.

KUCC wants to thank the Division for its cooperation in resolving this matter. Please find attached copies of the slides presented during the KUCC water management overview on December 13, 1996. Two flow diagrams have also been attached showing the various water flows at KUCC.

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[2] While it is theoretically possible that a new distribution/management system could be constructed that did not include the tailings pipelines, this is highly unlikely and wasteful because of the great cost-savings that would be achieved by utilizing the existing pipelines. KUCC estimates that the cost of constructing a new pipeline would be approximately $5 million.

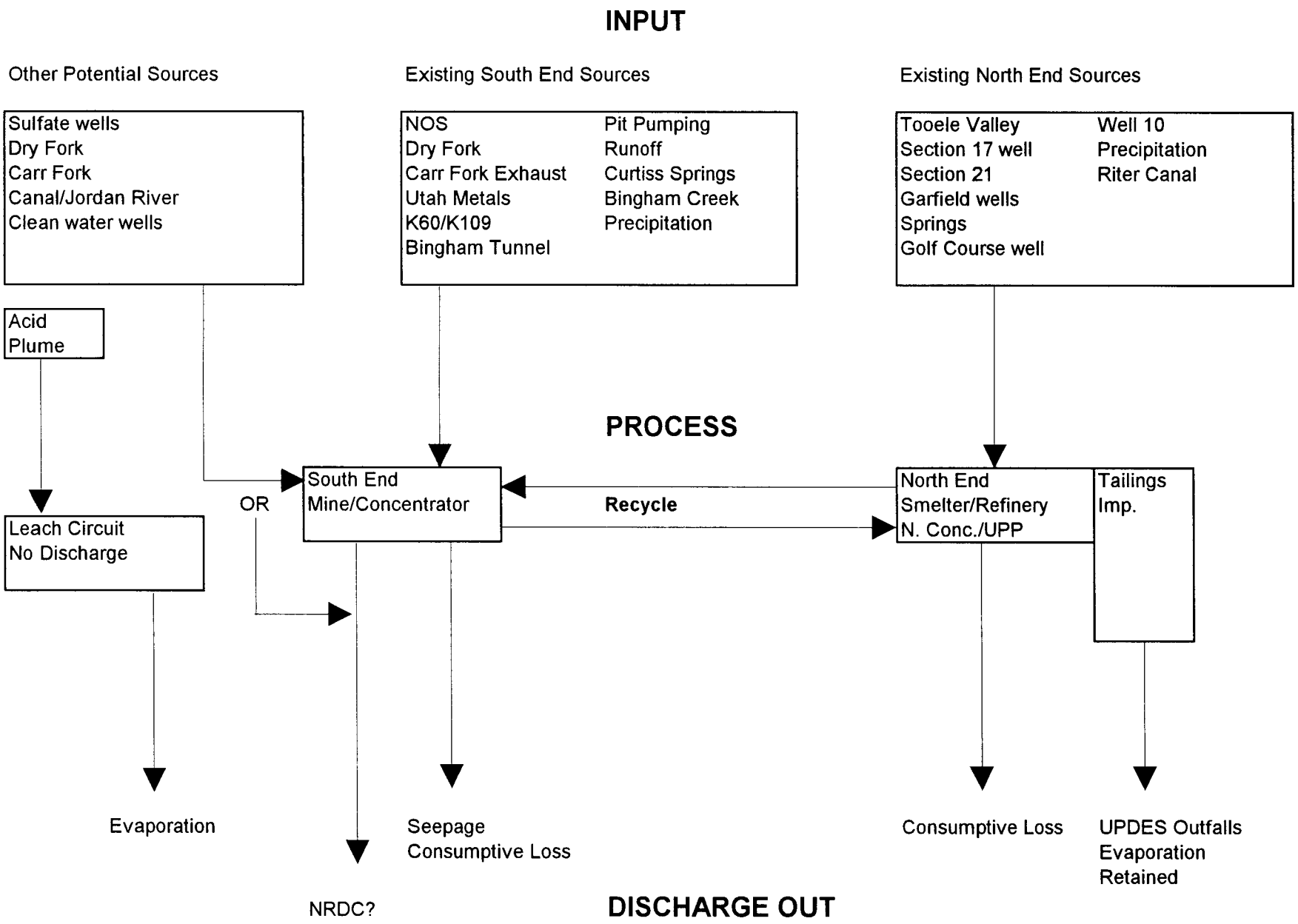
Please do not hesitate to call me at 252-3179 to discuss any aspect of the secondary tailings pipeline.

Sincerely,

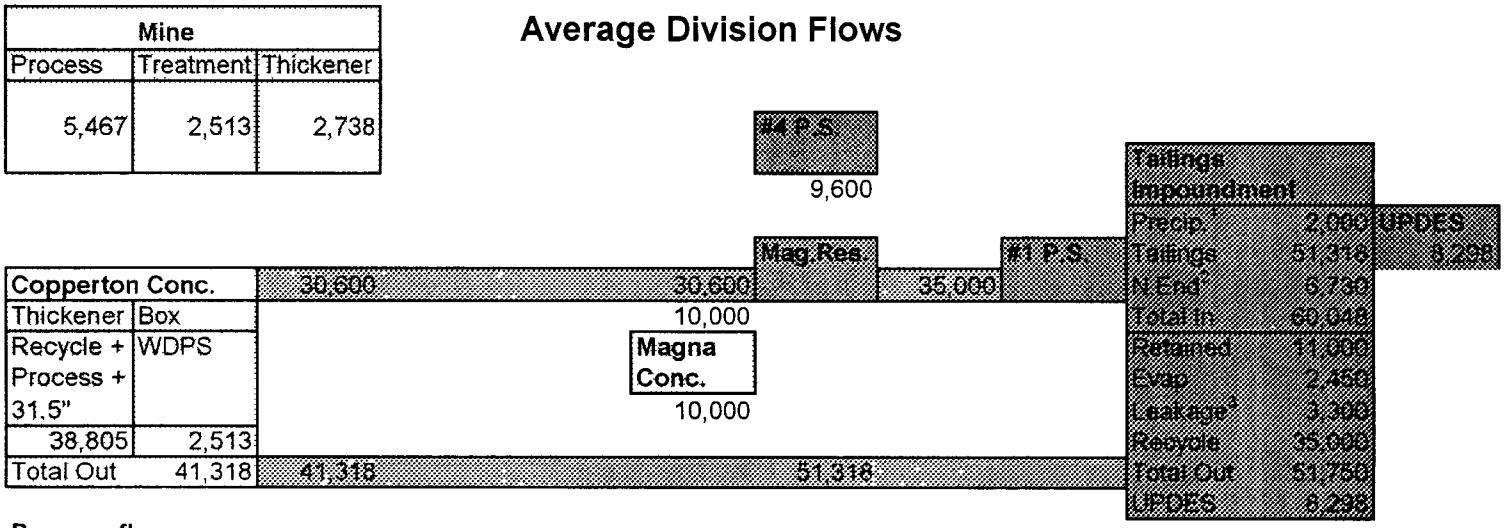
Elaine J. Dorward-King

Elaine Dorward-King, Ph.D.
Director, Environmental Affairs

Attachments


INPUT
Other Potential Sources
Existing South End Sources
Existing North End Sources
Sulfate wells
Dry Fork
Carr Fork
Canal/Jordan River
Clean water wells
NOS
Dry Fork
Carr Fork Exhaust
Utah Metals
K60/K109
Bingham Tunnel
Pit Pumping
Runoff
Curtiss Springs
Bingham Creek
Precipitation
Tooele Valley
Section 17 well
Section 21
Garfield wells
Springs
Golf Course well
Well 10
Precipitation
Riter Canal
Acid
Plume
PROCESS
South End
Mine/Concentrator
OR
Recycle
North End
Smelter/Refinery
N. Conc./UPP
Tailings
Imp.
Leach Circuit
No Discharge
Evaporation
Seepage
Consumptive Loss
Consumptive Loss
UPDES Outfalls
Evaporation
Retained
NRDC?
DISCHARGE OUT

Average Division Flows



Process flows

817	Via 24-inch
4,350	Via Moly Plant
300	Via Barneys
	Other
5,467	TOTAL

Thickeners

2,738	Via 31 5-inch
	Other
2,738	TOTAL

Treatment

2,513	WDPS
	Other
2,513	TOTAL

#1 Pump Station
35,000

#4 Pump Station
9,600

#3B Pump Station
30,600

Precip.[1]	2,000
Retained	11,000
Evap	2,450

N.End[2]	1,230	Slag Tailings
	4,000	Adamson Springs
	500	UPP Blowdown
	1,000	Golf Course Well and Well 10
	6,730	TOTAL

Leakage[3]	3,300	Floor and Embankment

WATER MANAGEMENT AT UTAH COPPER

Current Integrated Water System

- Drinking Water Systems
- Clean Water Diversions
- Leach Circuit
- Process Water System
- Permits

Historical Overview of Water Management at Bingham Canyon

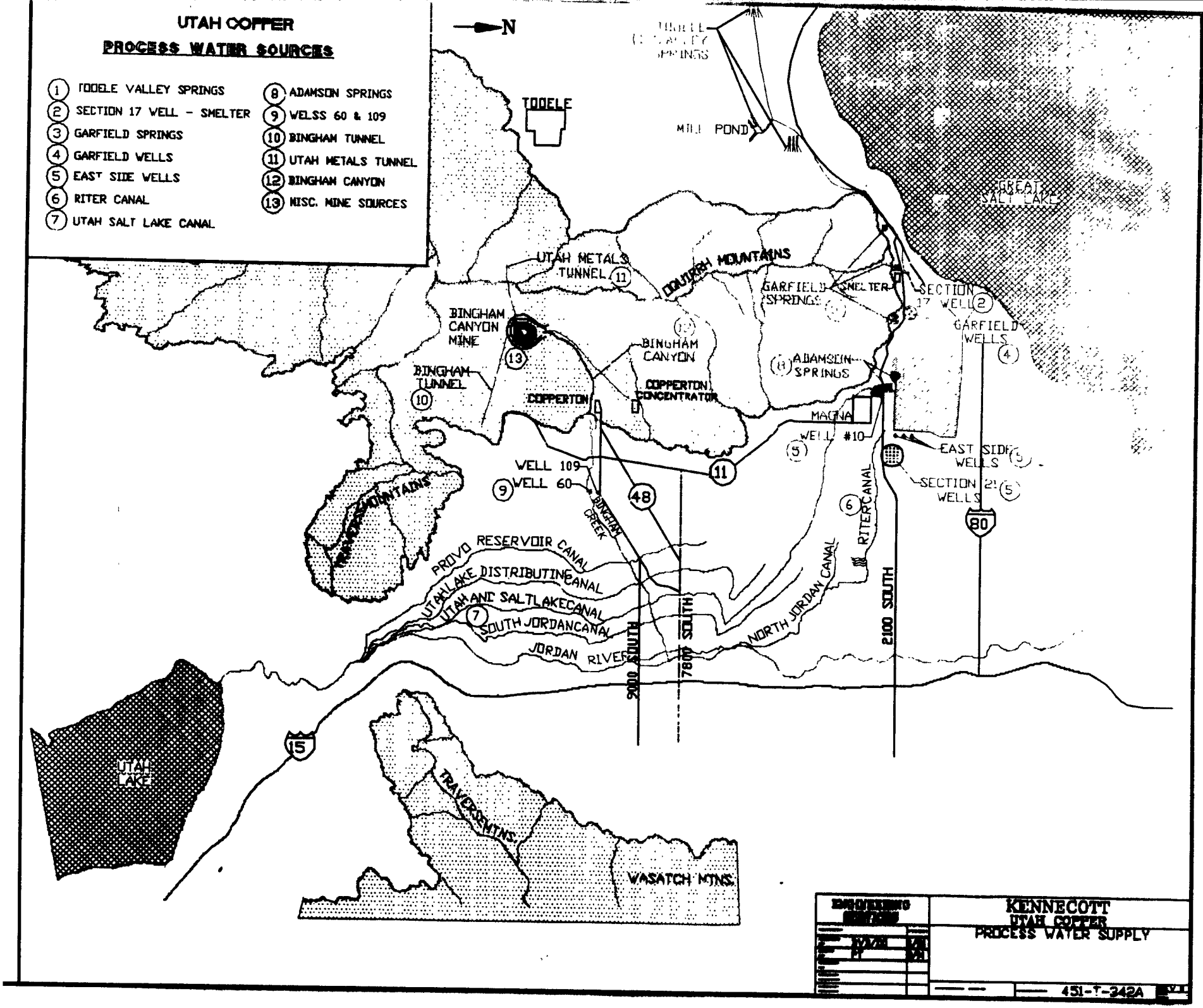
- Bingham Creek
- Leached Waste Rock Dumps
- South Jordan Evaporation Ponds
- Bingham Creek Reservoir

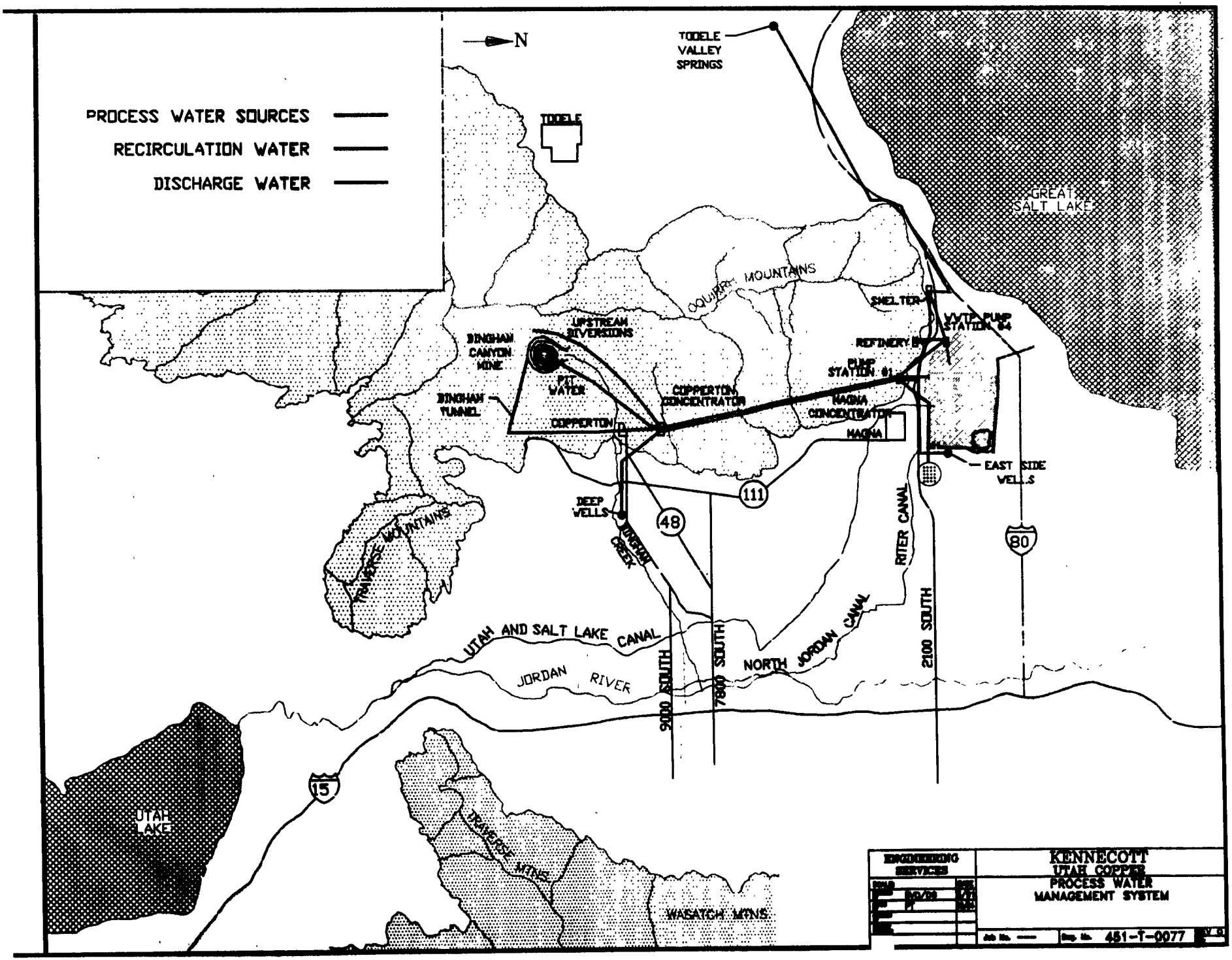
Recent Water Management Projects

- Eastside Collection System
- Large Reservoir
- Dry Fork
- Tailings Impoundment Expansion

South End Ground Water Remedial Investigation/Feasibility Study

Natural Resource Damage Claim


UTAH COPPER
PROCESS WATER SOURCES
1 TOOELE VALLEY SPRINGS
2 SECTION 17 WELL - SMELTER
3 GARFIELD SPRINGS
4 GARFIELD WELLS
5 EAST SIDE WELLS
6 RITER CANAL
7 UTAH SALT LAKE CANAL
8 ADAMSON SPRINGS
9 WELSS 60 & 109
10 BINGHAM TUNNEL
11 UTAH METALS TUNNEL
12 BINGHAM CANYON
13 MISC. MINE SOURCES
N
TOOELE
MILL POND
GREAT SALT LAKE
UTAH METALS TUNNEL
OQUIRRH MOUNTAINS
GARFIELD SMELTER
SECTION 17 WELL
GARFIELD SPRINGS
GARFIELD WELLS
BINGHAM CANYON MINE
BINGHAM CANYON
ADAMSON SPRINGS
BINGHAM TUNNEL
COPPERTON
COPPERTON CONCENTRATOR
MAGNA
WELL #10
EAST SIDE WELLS
SECTION 21 WELLS
WELL 109
WELL 60
BINGHAM CREEK
RITER CANAL
PROVO RESERVOIR CANAL
UTAH LAKE DISTRIBUTING CANAL
UTAH AND SALT LAKE CANAL
SOUTH JORDAN CANAL
NORTH JORDAN CANAL
JORDAN RIVER
2100 SOUTH
7800 SOUTH
2000 SOUTH
OQUIRRH MTNS.
TRAVERSE MTNS.
WASATCH MTNS.
UTAH LAKE
48
80
15
KENNECOTT
UTAH COPPER
PROCESS WATER SUPPLY
451-T-242A


PROCESS WATER SOURCES
RECIRCULATION WATER
DISCHARGE WATER
N
TOOELE VALLEY SPRINGS
TOOELE
GREAT SALT LAKE
OQUIRRH MOUNTAINS
SHELTER
WWTP PUMP STATION #4
REFINERY
PUMP STATION #1
UPSTREAM DIVERSIONS
BINGHAM CANYON MINE
PIT WATER
BINGHAM TUNNEL
COPPERTON CONCENTRATOR
MAGNA CONCENTRATOR
COPPERTON
MAGNA
EAST SIDE WELLS
DEEP WELLS
JORDAN CREEK
TRAVERSE MOUNTAINS
RITER CANAL
2100 SOUTH
9000 SOUTH
7800 SOUTH
NORTH JORDAN CANAL
UTAH AND SALT LAKE CANAL
JORDAN RIVER
UTAH LAKE
TRAVERSE MTNS.
WASATCH MTNS.
111
48
80
15
ENGINEERING SERVICES
KENNECOTT
UTAH COPPER
PROCESS WATER MANAGEMENT SYSTEM
Dwg No. 451-T-0077

KENNECOTT UTAH COPPER

MAJOR WATER USES

AREA	PRIMARY PURPOSE
MINE	DUST CONTROL CULINARY USE WASH STATION LEACH SYSTEM
COPPERTON CONCENTRATOR	GRINDING FLOTATION RECYCLING TAILINGS SLURRY CONCENTRATE SLURRY CULINARY USE
NORTH CONCENTRATOR	GRINDING FLOTATION RECYCLING TAILINGS SLURRY DUST CONTROL WASH STATION CULINARY USE
TAILINGS IMPOUNDMENT	TAILINGS STORAGE RECYCLING DUST CONTROL DISCHARGE
UTAH POWER PLANT	COOLING ASH SLURRY RECYCLING DUST CONTROL CULINARY USE

SMELTER	**GRINDING** **FLOTATION** **TAILINGS SLURRY** **COOLING** **SCRUBBERS** **RECYCLING** **CULINARY** **DUST CONTROL** **WASH STATION**
REFINERY	**COOLING** **RECYCLING** **DUST CONTROL** **CULINARY**
HYDRO-MET	**WEAK ACID BLOW DOWN** **ELECTROLYTE BLEED** **RECYCLING**

RI/FS FOR SOUTH END GROUND WATER

Focused Feasibility Study Completed in 1993

Initial Screening of all Alternatives from No Action to Active Restoration

Retained: Source control; Point of Use Management; Containment; Conveyance

Remedial Investigation

Well Inventory

Natural Background Concentrations

Additional Monitoring Wells

- **Low pH, metals plume**
- **Lark area**
- **Riverton area**

Extraction Well

Production Well

Plume Containment Investigations

- **Effects of pumping water supply wells K60 and K109**

Effects on Jordan River

Feasibility Study

Detailed Evaluation of Alternatives

- **Evaluation Tools**
  - **Flow Modeling**
  - **Geochemical Modeling**
  - **Transport Modeling**

Treatability Testing

- **Reverse Osmosis**
- **Biosulfide Reactor**
- **Wetlands**
- **Blending**

Replacement Water

Natural Resource Damage Claim

LEACH CIRCUIT

Recycle 15,000 to 23,000 gpm on actively leached dumps

Additional 1,000 gpm meteoric water on dump faces

Approximately 3,000 acre feet of water in circulation and storage

Quality: **pH about 3.0**
TDS about 90,000 mg/L
Sulfate about 50,000 mg/L
Copper about 100 mg/L

Zero Discharge Facility

Eastside Collection System Serves as Containment

Small Reservoir acts as Tailwater Reservoir for System

Large Reservoir Storm Water Storage and Upset Backup

GWDP Required for Small Reservoir, Large Reservoir, Eastside Collection System

Picket Fence Concept

UPDES PERMIT

Renewal Date: February 5, 1995

Permitted Outfalls at:

Butterfield Tunnel

Pine Canyon Portal

Toe Drain of New Tailings Embankment

West C-7 Ditch

Refinery Waste Water Treatment Plant

Smelter